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### CONTROLLING BLACK-ROT OF GRAPES.

In the eastern half of the United States black-rot has proven a serious drawback to grape culture. Humidity is favorable to this disease. More than twenty years ago spraying was introduced as a means of combating this and other fungous diseases of vines and fruit trees, and Bordeaux mixture has been the standard fungicide from the first.

As, during recent years, a good deal of discouragement among commercial grape growers has resulted from the spread of black-rot and their failure to control it satisfactorily, the United States Department of Agriculture about three years ago began a series of experiments to demonstrate the best methods of combating this disease. These experiments have been conducted in Pennsylvania, New Jersey, New York, and Michigan, and have extended over three seasons. The Department has just published a report on these experiments (Bul. 155, Bureau of Plant Industry).

Several different fungicides were tried, but none was found to be as satisfactory as Bordeaux mixture. It was demonstrated, however, that a 4-3-50 mixture (4 pounds of bluestone, 3 pounds of lime, and 50 gallons of water) gives fully as good results as stronger mixtures. It was found to be unwise to use more lime than is absolutely necessary, as, when used to excess, it tends to hinder the action of the copper sulphate. It was also found that five sprayings will usually produce as good results as a greater number.

Among other mixtures tried, that known as the "neutral copper acetate" solution promises to be very satisfactory for the last application because of its nonstaining effect.

On the whole the experiments have been quite successful. In 1907, where unsprayed grapes were a total loss, spraying reduced the loss to 28 per cent. The next season, when the rot was almost as bad on unsprayed vineyards, on the same sprayed plats the loss was reduced to less than 1 per cent. The good effect appears to be cumulative. The greatly increased spraying activity of growers, especially in Michigan, shows that these demonstrations have produced a good effect.

